#10

SEQUENCE LISTING

<110> LAGARIAS, JOHN

KOICHI, TAKAYUKI

FRANKENBERG, NICOLE

GAMBETTA, GREGORY

MONTGOMERY, BERONDA

<120> HY2 FAMILY OF BILIN REDUCTASES

<130> 407T-907720US

<140> US 09/870,406

<141> 2001-05-29

<150> 60/271,758

<151> 2001-02-26

B1

<150> 60/210,286

<151> 2000-06-08

<160> 57

<170> PatentIn version 3.0

<210> 1

<211> 30

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 1
acagcgagat tcaaaggtcc attaaccgga 30

<210> 2

<211> 30

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 2
gggcttacag tgatatctgc aagacttcta 30

<210> 3

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 3
taatgcttgc gacaaacagg 20

<210> 4

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 4
gttcatctca gggccaaaaa 20

<210> 5

<211> 22

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 5
gctttcagaa atcagacctc aa 22

<210> 6

<211> 21

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 6
ctggtgtggt tgatcgaatc t 21

<210> 7

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 7
ctgccaagct tcatttggtt 20

<210> 8

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 8
gcaggagctg cagacaatct 20

<210> 9

<211> 22

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 9
caatgcaggt ttaacttcag ca 22

<210> 10

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 10
ccatgggaaa gtctgcaaat 20

<210> 11

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 11
tcaagccctt ttccaacatc 20

<210> 12

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 12
ttccccatct gaactcaacc 20

<210> 13

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 13
aatgatgcat ggtgttggtg 20

<210> 14

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 14
gctcgaggaa aagtcatcca 20

<210> 15

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 15
cgtttgtctc actgaaactg 20

<210> 16

<211> 20

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 16
caatcatctt gaaatgcaga 20

<210> 17

<211> 30

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 17
gaagatctgt ctctgctgtg tcgtataagg 30

<210> 18

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 18
tcccccgggt tagccgataa attgtcctgt taaatc 36

<210> 19

<211> 28

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 19
aaggatccat ggccgtcact gatttaag 28

<210> 20

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 20
acgcgtcgac tattattgga taacatcaaa taagac 36

<210> 21

<211> 29

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 21
ggaattcatc tttgattcat ttctcaatg 29

<210> 22

<211> 36

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 22
atagttagcg gccgctcatt tgtgagagga ggaggc 36

<210> 23

<211> 31

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 23
ggaattcatc acaaatcaaa gattcaaaag c 31

<210> 24

<211> 40

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 24
atagttagcg gccgcttata gatcaaaaag cacagtgtgg 40

<210> 25

<211> 30

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 25
ggaattcatc tcacttactt ccattccctc 30

<210> 26

<211> 37

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 26
atagttagcg gccgcttatt ctgggagatc aaataac 37

<210> 27

<211> 3997

<212> DNA

<213> Artificial

<220>

<223> Plsmid pPROLarA122/H01-RBS-SLR0116

<400> 27
cagaattcat taaagaggag aaaggtacca tgagtgtcaa cttagcttcc cagttgcggg 60

aagggacgaa aaaatcccac tccatggcgg agaacgtcgg ctttgtcaaa tgcttcctca 120

agggcgttgt cgagaaaaat tcctaccgta agctggttgg caatctctac tttgtctaca 180

gtgccatgga agaggaaatg gcaaaattta aggaccatcc catcctcagc cacatttact 240

tccccgaact caaccgcaaa caaagcctag agcaagacct gcaattctat tacggctcca 300

actggcggca agaagtgaaa atttctgccg ctggccaagc ctatgtggac cgagtccggc 360

aagtggccgc tacggccccc gaattgttgg tggcccattc ctacacccgt tacctggggg 420

atctttccgg cggtcaaatt ctcaagaaaa ttgcccaaaa tgccatgaat ctccacgatg 480

gtggcacagc tttctatgaa tttgccgaca ttgatgacga aaaggctttt aaaaatacct 540

accgtcaagc tatgaatgat ctgcccattg accaagccac cgccgaacgg attgtggatg 600

aagccaatga cgcctttgcc atgaacatga aaatgttcaa cgaacttgaa ggcaacctga 660

tcaaggcgat cggcattatg gtgttcaaca gcctcacccg tcgccgcagt caaggcagca 720

ccgaagttgg cctcgccacc tccgaaggct agttaaagag gagaaaggat ccatggccgt 780

cactgattta agtttgacca attcttccct gatgcctacg ttgaacccga tgattcaaca 840

gttggccctg gcgatcgccg ctagttggca aagtttaccc ctcaagccct atcaattgcc 900

ggaggatttg ggctacgtag aaggccgcct ggaaggggaa aagttagtga ttgaaaatcg 960

gtgctaccaa acgccccagt ttcgcaaaat gcatttggag ttggccaagg tgggcaaagg 1020

gttggatatt ctccactgtg taatgtttcc tgagccttta tacggtctac ctttgtttgg 1080

ctgtgacatt gtggccggcc ccggtggagt aagtgcggct attgcggatc tatcccccac 1140

ccaaagcgat cgccaattgc ccgcagcgta ccaaaaatca ttggcagagc taggccagcc 1200

agaatttgag caacaacggg aattgccccc ctggggagaa atattttctg aatattgttt 1260

attcatccgt cccagcaatg tcactgaaga agaaagattt gtacaaaggg tagtggactt 1320

tttgcaaatt cattgtcacc aatccatcgt tgccgaaccc ttgtctgaag ctcaaacttt 1380

ggagcaccgt caggggcaaa ttcattactg ccaacaacaa cagaaaaatg ataaaacccg 1440

tcgggtactg gaaaaagctt ttggggaagc ttgggcggaa cggtatatga gccaagtctt 1500

atttgatgtt atccaataat ctagaggcat caaataaaac gaaaggctca gtcgaaagac 1560

tgggcctttc gttttatctg ttgtttgtcg gtgaacgctc tcctgagtag gacaaatccg 1620

ccgccctaga cctaggggat atattccgct tcctcgctca ctgactcgct acgctcggtc 1680

gttcgactgc ggcgagcgga aatggcttac gaacggggcg gagatttcct ggaagatgcc 1740

aggaagatac ttaacaggga agtgagaggg ccgcggcaaa gccgtttttc cataggctcc 1800

gccccccctga caagcatcac gaaatctgac gctcaaatca gtggtggcga aacccgacag 1860

gactataaag ataccaggcg tttccccctg gcggctccct cgtgcgctct cctgttcctg 1920

cctttcggtt taccggtgtc attccgctgt tatggccgcg tttgtctcat tccacgcctg 1980

acactcagtt ccgggtaggc agttcgctcc aagctggact gtatgcacga acccccccgtt 2040

cagtccgacc gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggaaagacat 2100

gcaaaagcac cactggcagc agccactggt aattgattta gaggagttag tcttgaagtc 2160

atgcgccggt taaggctaaa ctgaaaggac aagttttggt gactgcgctc ctccaagcca 2220

gttacctcgg ttcaaagagt tggtagctca gagaaccttc gaaaaaccgc cctgcaaggc 2280

ggttttttcg ttttcagagc aagagattac gcgcagacca aaacgatctc aagaagatca 2340

tcttattaat cagataaaat attactagat ttcagtgcaa tttatctctt caaatgtagc 2400

acctgaagtc agccccatac gatataagtt gttactagtg cttggattct caccaataaa 2460

aaacgcccgg cggcaaccga gcgttctgaa caaatccaga tggagttctg aggtcattac 2520

tggatctatc aacaggagtc caagcgagct ctcgaacccc agagtcccgc tcagaagaac 2580

tcgtcaagaa ggcgatagaa ggcgatgcgc tgcgaatcgg gagcggcgat accgtaaagc 2640

acgaggaagc ggtcagccca ttcgccgcca agctcttcag caatatcacg ggtagccaac 2700

gctatgtcct gatagcggtc cgccacaccc agccggccac agtcgatgaa tccagaaaag 2760

cggccatttt ccaccatgat attcggcaag caggcatcgc catgggtcac gacgagatcc 2820

tcgccgtcgg gcatgcgcgc cttgagcctg gcgaacagtt cggctggcgc gagcccctga 2880

tgctcttcgt ccagatcatc ctgatcgaca agaccggctt ccatccgagt acgtgctcgc 2940

tcgatgcgat gtttcgcttg gtggtcgaat gggcaggtag ccggatcaag cgtatgcagc 3000

cgccgcattg catcagccat gatggatact ttctcggcag gagcaaggtg agatgacagg 3060

agatcctgcc ccggcacttc gcccaatagc agccagtccc ttcccgcttc agtgacaacg 3120

tcgagcacag ctgcgcaagg aacgcccgtc gtggccagcc acgatagccg cgctgcctcg 3180

tcctgcagtt cattcagggc accggacagg tcggtcttga caaaaagaac cgggcgcccc 3240

tgcgctgaca gccggaacac ggcggcatca gagcagccga ttgtctgttg tgcccagtca 3300

tagccgaata gcctctccac ccaagcggcc ggagaacctg cgtgcaatcc atcttgttca 3360

atcatgcgaa acgatcctca tcctgtctct tgatcagatc ttgatccccc gcgccatcag 3420

atccttggcg gcaagaaagc catccagttt actttgcagg gcttcccaac cttaccagag 3480

ggcgccccag ctggcaattc cgacgtctgt gtggaattgt gagcggataa caatttcaca 3540

cagggccctc ggacaccgag gagaatgtca agaggcgaac acacaacgtc ttggagcgcc 3600

agaggaggaa cgagctaaaa cggagctttt ttgccctgcg tgaccagatc ccggagttgg 3660

aaaacaatga aaaggccccc aaggtagtta tccttaaaaa agccacagca tacatcctgt 3720

ccgtccaagc agaggagcaa aagctcattt ctgaagagga cttgttgcgg aaacgacgag 3780

aacagttgaa acacaaactt gaacagctac ggaactcttg tgcgtaagga aaagtaagga 3840

aaacgattcc ttctaacaga aatgtcctga gcaatcacct atgaactgtc gactcgagca 3900

tagcattttt atccataaga ttagcggatc taacctttac aattgtgagc gctcacaatt 3960

atgatagatt caattgtgag cggataacaa tttcaca 3997

<210> 28

<211> 29

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 28
atcggtacca tgagtgtcaa cttagcttc 29

<210> 29

<211> 43

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 29
attggatcct ttctcctctt taactagcct tcggaggtgg cga 43

<210> 30

<211> 23

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 30
cggatatcat gtcccctata cta 23

<210> 31

<211> 28

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 31
gcgcggccgc ttagccgata aattgtcc 28

<210> 32

<211> 2160

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (248)..(469)

<220>

<221> CDS

<222> (653)..(769)

<220>

<221> CDS

<222> (852)..(947)

<220>

<221> CDS

<222> (1034)..(1126)

<220>

<221> CDS

<222> (1213)..(1344)

<220>

<221> CDS

<222> (1419)..(1523)

<220>

<221> CDS

<222> (1612)..(1662)

<220>

<221> CDS

<222> (1743)..(1913)

<400> 32

```
gaattcccca cgtcaacgtg actgtgcatt ccacgtggcg gatgtgggcc ctatagttgg     60

accatgactc ggacggatgt tgaaattcat tgtcgttgcc aattgcgttt gtctcactga    120

aactgtgaaa attttatctc ttttatagat aaagaatctt gctttttca gttttcagta    180

tgaagaagaa ttgaagagag tgtccgagga aggagacctt tggtttcagt ttgtgagtct    240

tgttgta atg gct tta tca atg gag ttt ggg ttt tca att ggg tca tgc      289
       Met Ala Leu Ser Met Glu Phe Gly Phe Ser Ile Gly Ser Cys
       1               5                   10

ttc aag gca cca aac cca cct gtt cta atc tct gca agc cct aat aag      337
Phe Lys Ala Pro Asn Pro Pro Val Leu Ile Ser Ala Ser Pro Asn Lys
15                 20                  25                  30

atc aat ttc acg ttg aga agg aga aag aaa aga ttc tta ctt aga gtc      385
Ile Asn Phe Thr Leu Arg Arg Arg Lys Lys Arg Phe Leu Leu Arg Val
                35                  40                  45

tct gct gtg tcg tat aag gaa ttc gca gag tct gct tta gaa gaa acc      433
Ser Ala Val Ser Tyr Lys Glu Phe Ala Glu Ser Ala Leu Glu Glu Thr
            50                  55                  60

agg aaa agg atc gtt ctt gaa cct tca cat ctc cag gtatatgcaa          479
```

```
Arg Lys Arg Ile Val Leu Glu Pro Ser His Leu Gln
        65                  70

ttacatttcg ttagtgtagt gggaggatta tatttctcat tgtttcttgc tgtgaatttt    539

gggtaaattg atttgagttg tcattaggaa ccaaacaaat aactttactg ttatagactg    599

cttatataag taaaagttca gattttgttt ttctaatcac gaaactgttt cag gaa       655
                                                          Glu
                                                          75

aag tat agt agc atg aca gga cta gat ggt aag acc gaa ctt caa atg      703
Lys Tyr Ser Ser Met Thr Gly Leu Asp Gly Lys Thr Glu Leu Gln Met
                80                  85                  90

ctt gct ttt aaa tct tca aag att aga ctc ttg agg agt atg gca ata      751
Leu Ala Phe Lys Ser Ser Lys Ile Arg Leu Leu Arg Ser Met Ala Ile
            95                  100                 105

gag aat gag aca atg cag gtttaacttc agcagtacaa actgattgct             799
Glu Asn Glu Thr Met Gln
        110

ttagtcccat ttccttactt tcaattgatt gattgtttgt atcttcgctt ag gtc ttt    857
                                                          Val Phe
                                                              115

gac ttt gcg ggt ttc atg gag cct gag tat gat act ccc ata ttc tgt      905
Asp Phe Ala Gly Phe Met Glu Pro Glu Tyr Asp Thr Pro Ile Phe Cys
                120                 125                 130

gct aac ttt ttc aca tct acc aac gtt aac ata gtt gta ttg              947
Ala Asn Phe Phe Thr Ser Thr Asn Val Asn Ile Val Val Leu
            135                 140                 145

taagttatct tctagttatg ctggagttat caggtctgta ttgtccaaac tgatgttcaa   1007

tattttactg tatgttcttc tttagg gac ctt aat cct ttg cat cag ttg act    1060
                              Asp Leu Asn Pro Leu His Gln Leu Thr
                                          150

gac cag acg gat tac caa gac aag tat tat aac aag ata atg tcc ata     1108
Asp Gln Thr Asp Tyr Gln Asp Lys Tyr Tyr Asn Lys Ile Met Ser Ile
155                 160                 165                 170

tat cac aaa tat gct gag gtgaccacaa gaatacacca aattactcaa            1156
Tyr His Lys Tyr Ala Glu
                175

ttgcaagtaa acctaatgct gaggtgtaaa tgactgatct tgagatttat ttgcag act   1215
                                                              Thr

ttc cca tgg gga ggg aaa ttg act ggt gaa tcc ata aag ttt ttc tcg     1263
Phe Pro Trp Gly Gly Lys Leu Thr Gly Glu Ser Ile Lys Phe Phe Ser
        180                 185                 190
```

```
cct ttg gtg atg tgg act agg ttt tcg tct agc aaa gaa aaa cat aag     1311
Pro Leu Val Met Trp Thr Arg Phe Ser Ser Ser Lys Glu Lys His Lys
    195                 200                 205

gct ttg ttc tct gcg ttt cta gag tac tat cag gtatatactc agcggccaaa   1364
Ala Leu Phe Ser Ala Phe Leu Glu Tyr Tyr Gln
210                 215                 220

agctaaggtt ttattggaaa ctttgactga gaatctatca tcttcttcct acag gca     1421
                                                            Ala


tgg ctt gag atg aca atc caa gtg agg gag gag atg gaa cca tct cat     1469
Trp Leu Glu Met Thr Ile Gln Val Arg Glu Glu Met Glu Pro Ser His
            225                 230                 235

gtg aga gcc aat tgt gaa gca caa cac aag tac ctg aca tgg cga gca     1517
Val Arg Ala Asn Cys Glu Ala Gln His Lys Tyr Leu Thr Trp Arg Ala
        240                 245                 250

caa aag gtgatttcat ttccttttgt gtaatttgca tgtttgaaca gacactgtat      1573
Gln Lys
    255

ctgtattgtt acaatggata ttgatttggt gtttgcag gat cct gga cat ggt ctt   1629
                                Asp Pro Gly His Gly Leu
                                                260

ctt aaa aga tta gta ggt gaa gca aag gca aag gtataaaaga tttgatccca   1682
Leu Lys Arg Leu Val Gly Glu Ala Lys Ala Lys
            265                 270

ttagtgtccc cattattaat tagcttgtga agatgttgaa aatgatttga acaaaatcag   1742

gag ctg cta agg gat ttc ctg ttc aat ggg gtg gat gag tta ggc aca     1790
Glu Leu Leu Arg Asp Phe Leu Phe Asn Gly Val Asp Glu Leu Gly Thr
        275                 280                 285

aaa aca ttc att gat tac ttt cca gag tac caa aca gaa gat gga act     1838
Lys Thr Phe Ile Asp Tyr Phe Pro Glu Tyr Gln Thr Glu Asp Gly Thr
    290                 295                 300

gta agc gat aaa cga agt atc att ggg aag tca tat gaa act cgt cca     1886
Val Ser Asp Lys Arg Ser Ile Ile Gly Lys Ser Tyr Glu Thr Arg Pro
305                 310                 315                 320

tgg gat tta aca gga caa ttt atc ggc taacaatgat atatgtgaac           1933
Trp Asp Leu Thr Gly Gln Phe Ile Gly
                325

aagtcagatt tcagagtcat caacacaaga ggacgtgaac ttagggaagt aggaataaga   1993

aagagcagca tgaggagtct ctcaggtcta tctgcatttc aagatgattg tttgagttac   2053

catgcattgt agttttacaa gtgtagctct cagcccttca tcaaaatgag aatcctcgag   2113
```

tatgatatga ttttaatgaa aatgtattcg tctctaccta atcaaca 2160

<210> 33

<211> 329

<212> PRT

<213> Arabidopsis thaliana

<400> 33

Met Ala Leu Ser Met Glu Phe Gly Phe Ser Ile Gly Ser Cys Phe Lys
1 5 10 15

Ala Pro Asn Pro Pro Val Leu Ile Ser Ala Ser Pro Asn Lys Ile Asn
20 25 30

Phe Thr Leu Arg Arg Arg Lys Lys Arg Phe Leu Leu Arg Val Ser Ala
35 40 45

Val Ser Tyr Lys Glu Phe Ala Glu Ser Ala Leu Glu Glu Thr Arg Lys
50 55 60

Arg Ile Val Leu Glu Pro Ser His Leu Gln Glu Lys Tyr Ser Ser Met
65 70 75 80

Thr Gly Leu Asp Gly Lys Thr Glu Leu Gln Met Leu Ala Phe Lys Ser
85 90 95

Ser Lys Ile Arg Leu Leu Arg Ser Met Ala Ile Glu Asn Glu Thr Met
100 105 110

Gln Val Phe Asp Phe Ala Gly Phe Met Glu Pro Glu Tyr Asp Thr Pro
115 120 125

Ile Phe Cys Ala Asn Phe Phe Thr Ser Thr Asn Val Asn Ile Val Val
130 135 140

Leu Asp Leu Asn Pro Leu His Gln Leu Thr Asp Gln Thr Asp Tyr Gln
145 150 155 160

Asp Lys Tyr Tyr Asn Lys Ile Met Ser Ile Tyr His Lys Tyr Ala Glu
165 170 175

Thr Phe Pro Trp Gly Gly Lys Leu Thr Gly Glu Ser Ile Lys Phe Phe
180 185 190

Ser Pro Leu Val Met Trp Thr Arg Phe Ser Ser Ser Lys Glu Lys His
195 200 205

Lys Ala Leu Phe Ser Ala Phe Leu Glu Tyr Tyr Gln Ala Trp Leu Glu
210 215 220

Met Thr Ile Gln Val Arg Glu Glu Met Glu Pro Ser His Val Arg Ala
225 230 235 240

Asn Cys Glu Ala Gln His Lys Tyr Leu Thr Trp Arg Ala Gln Lys Asp
245 250 255

Pro Gly His Gly Leu Leu Lys Arg Leu Val Gly Glu Ala Lys Ala Lys
260 265 270

Glu Leu Leu Arg Asp Phe Leu Phe Asn Gly Val Asp Glu Leu Gly Thr
275 280 285

Lys Thr Phe Ile Asp Tyr Phe Pro Glu Tyr Gln Thr Glu Asp Gly Thr
290 295 300

Val Ser Asp Lys Arg Ser Ile Ile Gly Lys Ser Tyr Glu Thr Arg Pro
305 310 315 320

Trp Asp Leu Thr Gly Gln Phe Ile Gly
325

<210> 34

<211> 329

<212> PRT

<213> Arapidopsis thaliana

<400> 34

```
Met Ala Leu Ser Met Glu Phe Gly Phe Ser Ile Gly Ser Cys Phe Lys
1               5                  10                  15

Ala Pro Asn Pro Pro Val Leu Ile Ser Ala Ser Pro Asn Lys Ile Asn
            20                  25                  30

Phe Thr Leu Arg Arg Arg Lys Lys Arg Phe Leu Leu Arg Val Ser Ala
        35                  40                  45

Val Ser Tyr Lys Glu Phe Ala Glu Ser Ala Leu Glu Glu Thr Arg Lys
    50                  55                  60

Arg Ile Val Leu Glu Pro Ser His Leu Gln Glu Lys Tyr Ser Ser Met
65                  70                  75                  80

Thr Gly Leu Asp Gly Lys Thr Glu Leu Gln Met Leu Ala Phe Lys Ser
                85                  90                  95

Ser Lys Ile Arg Leu Leu Arg Ser Met Ala Ile Glu Asn Glu Thr Met
            100                 105                 110

Gln Val Phe Asp Phe Ala Gly Phe Met Glu Pro Glu Tyr Asp Thr Pro
        115                 120                 125

Ile Phe Cys Ala Asn Phe Phe Thr Ser Thr Asn Val Asn Ile Val Val
    130                 135                 140

Leu Asp Leu Asn Pro Leu His Gln Leu Thr Asp Gln Thr Asp Tyr Gln
145                 150                 155                 160

Asp Lys Tyr Tyr Asn Lys Ile Met Ser Ile Tyr His Lys Tyr Ala Glu
                165                 170                 175

Thr Phe Pro Trp Gly Gly Lys Leu Thr Gly Glu Ser Ile Lys Phe Phe
            180                 185                 190

Ser Pro Leu Val Met Trp Thr Arg Phe Ser Ser Ser Lys Glu Lys His
        195                 200                 205

Lys Ala Leu Phe Ser Ala Phe Leu Glu Tyr Tyr Gln Ala Trp Leu Glu
    210                 215                 220

Met Thr Ile Gln Val Arg Glu Glu Met Glu Pro Ser His Val Arg Ala
225                 230                 235                 240

Asn Cys Glu Ala Gln His Lys Tyr Leu Thr Trp Arg Ala Gln Lys Asp
                245                 250                 255

Pro Gly His Gly Leu Leu Lys Arg Leu Val Gly Glu Ala Lys Ala Lys
            260                 265                 270

Glu Leu Leu Arg Asp Phe Leu Phe Asn Gly Val Asp Glu Leu Gly Thr
        275                 280                 285

Lys Thr Phe Ile Asp Tyr Phe Pro Glu Tyr Gln Thr Glu Asp Gly Thr
    290                 295                 300
```

B1 Cont

Val Ser Asp Lys Arg Ser Ile Ile Gly Lys Ser Tyr Glu Thr Arg Pro
305 310 315 320

Trp Asp Leu Thr Gly Gln Phe Ile Gly
325

<210> 35

<211> 236

<212> PRT

<213> Synechococcus sp.

<400> 35

Met Phe Asp Ser Phe Leu Asn Glu Leu His Ser Asp Ile Thr Lys Arg
1 5 10 15

Gly Gly Ser Pro Leu Pro Leu Pro Glu Gly Leu Glu Glu Cys Arg Ser
20 25 30

Ser Lys Ser Ser Ser Val Ile Gln Ser Trp Leu Trp Asp Val Pro Gly
35 40 45

Phe Arg Arg Trp Arg Val Thr Arg Leu Asp Ala Gly Asp Ser Leu Gln
50 55 60

Val Phe Asn Ser Val Ala Tyr Pro Asp Tyr Asn Tyr Asp His Pro Leu
65 70 75 80

Met Gly Val Asp Leu Leu Trp Phe Gly Ala Arg Gln Lys Leu Val Ala
85 90 95

Val Leu Asp Phe Gln Pro Leu Val Gln Asp Lys Asp Tyr Leu Asp Arg
100 105 110

Tyr Phe Ser Gly Leu Lys Glu Leu Asn Gln Arg Phe Pro Asp Leu Asn
115 120 125

Gly Glu Glu Thr Met Arg Ser Phe Asp Pro Asn Gln Tyr Phe Ser Ser
130 135 140

Trp Leu Leu Phe Cys Arg Gly Gly Ala Glu Gln Ala Asp Leu Ser Leu
145 150 155 160

Pro Lys Ala Phe Ser Ala Phe Leu Lys Ala Tyr Trp Asp Leu His Asp
165 170 175

Asn Ala Lys Ser Ile Pro Ser Thr Ile Pro Pro Glu Glu Val Lys Asn
180 185 190

Leu Gln Asp Lys Tyr Asp Ile Tyr Ser Ala Glu Arg Asp Pro Ala His

195 200 205

Gly Leu Phe Thr Ser His Phe Gly Lys Asp Trp Ser Asn Arg Phe Leu
210 215 220

His Glu Phe Leu Phe Pro Ala Ser Ser Ser His Lys
225 230 235

<210> 36

<211> 257

<212> PRT

<213> Synechococcus sp.

<400> 36

Met Thr Asn Gln Arg Phe Lys Ser Thr Asp Pro Val Asn Ile Glu Gly
1 5 10 15

Trp Ser Trp Gln Pro Phe Leu Glu Asp Ala Ile Lys Arg Leu Glu Gly
20 25 30

Leu Asn Val Glu Pro Tyr Pro Val Pro Asp Arg Phe Leu Gln Arg Glu
35 40 45

Asp Gln Thr Gly Ser Lys Ser Lys Ser Ile Pro Val Thr Thr Ala Thr
50 55 60

Trp Ala Cys Lys Thr Glu Lys Phe Arg Gln Val Arg Ala Ala Cys Val
65 70 75 80

Ser Ala Gly Ser Ala Ala Ser Val Leu Asn Phe Val Ile Asn Pro Lys
85 90 95

B1 Cont

Ser Thr Tyr Gly Leu Pro Phe Phe Gly Gly Asp Leu Val Thr Phe Pro
100 105 110

Ala Gly His Leu Leu Ala Leu Asp Leu Gln Pro Ala Ile Lys Thr Asp
115 120 125

Glu Val His Thr Thr His Val Trp Asp Arg Leu Ile Pro Ile Phe Glu
130 135 140

Arg Trp Arg Asp Gln Leu Pro Tyr Gly Gly Pro Ile Pro Glu Glu Ala
145 150 155 160

Gln Pro Phe Phe Ser Pro Gly Phe Leu Trp Thr Arg Leu Pro Leu Gly
165 170 175

Glu Glu Gly Asp Glu Leu Ile Gln Ser Ile Val Arg Pro Ala Phe Asn
180 185 190

Asp Tyr Leu Asp Leu Tyr Leu Glu Leu Ala Ala Ser Ala Glu Arg Val
195 200 205

Thr Asp Glu Arg Ser Glu Val Leu Leu Gln Gly Gln Arg Lys Tyr Thr
210 215 220

Asp Tyr Arg Ala Glu Lys Asp Pro Ala Arg Gly Met Leu Thr Arg Phe
225 230 235 240

His Gly Ser Glu Trp Thr Glu Ala Tyr Ile His Thr Val Leu Phe Asp
245 250 255

Leu

<210> 37

<211> 241

<212> PRT

<213> Prochlorococcus marinus

<400> 37

Met Asn Lys Leu Met Leu Gln Asp Leu His Asn Asn Leu Lys Arg Arg
1 5 10 15

Ile Ile Ser His Gly Gly Lys Pro Ile Glu Val Glu Asn Gly Met Ser
20 25 30

Glu Arg Phe Ser His Lys Gln Asp Thr Val Ile Lys Ser Trp Leu Trp
35 40 45

Asp Val Pro Gly Phe Arg Arg Trp Arg Val Thr Arg Met Asp Ala Gly
50 55 60

B1 Cont

Asp Lys Leu Gln Val Leu Asn Ser Val Ala Tyr Pro Ala Tyr Thr Asn
65 70 75 80

Asp Lys Pro Ile Leu Gly Ile Asp Ile Leu Trp Phe Gly Leu Lys Arg
85 90 95

Lys Leu Val Ala Val Leu Asp Phe Gln Pro Leu Val Gln Glu Glu Arg
100 105 110

Tyr Phe Cys Arg Tyr Tyr Lys Asp Leu Gln Ile Leu Lys Asn Arg Phe
115 120 125

Val Asp Phe Asn Ser Gln Lys Thr Met Lys Ile Tyr Asp Ser Asn Lys
130 135 140

Tyr Phe Ser Pro Trp Val Leu Leu Tyr Asn Gly Ser Phe Asp Asp Leu
145 150 155 160

Gln Cys Ser Leu Ala Lys Ile Leu Asp Glu Phe Leu His Ala Tyr Trp
165 170 175

Gln Val Asp Asn Asn Asn Ser Arg Glu Tyr Ile Lys Ile Ile Pro Ser
180 185 190

Lys Val Glu Gln Leu His Ile Asn Tyr Asp Ile Tyr Ser Ala Glu Arg
195 200 205

Asp Pro Ala His Gly Leu Phe Lys Ser Tyr Phe Gly Gln Thr Trp Ala
210 215 220

Asp Gln Phe Val Arg Glu Phe Leu Phe Pro His Ser His Leu Thr Ala
225 230 235 240

Asp

<210> 38

<211> 257

<212> PRT

<213> PROCHLOROCOCCUS MARINUS

<400> 38

Met Ile Ile Lys Arg Asp Asn Ser Leu Ser Lys Ile Asp Leu Arg Asp
1 5 10 15

Trp Ile Trp Thr Pro Phe Phe Asn Asp Leu Val Asp Lys Leu Ser Val
20 25 30

Phe Glu Ile Glu Pro Tyr Pro Val Ser His Asp Phe Leu Ser Lys Glu
35 40 45

Ser Ile Thr Gly Ser Arg Arg Asn Pro Val His Val Thr Thr Leu Thr
50 55 60

Trp Ala Ala Lys Phe Glu Lys Ile Lys Gln Val Arg Leu Ala Cys Ile
65 70 75 80

Lys Gly Gly Glu Ser Leu Ser Val Phe Asn Leu Leu Ile His Pro Leu
85 90 95

Asn Asp Tyr Asp Leu Pro Phe Phe Gly Ala Asp Phe Val Thr Leu Pro
100 105 110

Asn Gly His Leu Leu Ala Leu Asp Leu Gln Pro Ala Leu Lys Leu Asp
115 120 125

Asn Ile His Thr Glu Asn Val Trp Pro Arg Leu Ile Pro Leu His Asp

B1 Cont

130 135 140

His Trp Gln Ser Leu Leu Pro Ser Gly Gly Glu Ile Pro Lys Glu Ala
145 150 155 160

Glu Pro Tyr Phe Ser Pro Gly Phe Leu Trp Ser Arg Leu Pro Leu Ser
165 170 175

Lys Glu Ser Asp Asn Ile Ile Ser Glu Ile Leu Arg Pro Ala Phe Gly
180 185 190

Glu Tyr Leu Ser Leu Tyr Ile Glu Leu Leu His Ile Ala Lys Pro Leu
195 200 205

Lys Lys Glu Arg Ala Leu Lys Ile Leu Glu Gly Gln Lys Ala Tyr Ile
210 215 220

Asn Tyr Arg Ser Thr Lys Asp Pro Ala Arg Ala Met Leu Cys Arg Phe
225 230 235 240

Tyr Gly Lys Glu Trp Thr Glu Asp Tyr Ile His Lys Val Leu Phe Asn
245 250 255

Ile

<210> 39

<211> 248

<212> PRT

<213> Synechocystis sp.

<400> 39

B1 Cont

Met Ala Val Thr Asp Leu Ser Leu Thr Asn Ser Ser Leu Met Pro Thr
1 5 10 15

Leu Asn Pro Met Ile Gln Gln Leu Ala Leu Ala Ile Ala Ala Ser Trp
20 25 30

Gln Ser Leu Pro Leu Lys Pro Tyr Gln Leu Pro Glu Asp Leu Gly Tyr
35 40 45

Val Glu Gly Arg Leu Glu Gly Glu Lys Leu Val Ile Glu Asn Arg Cys
50 55 60

Tyr Gln Thr Pro Gln Phe Arg Lys Met His Leu Glu Leu Ala Lys Val
65 70 75 80

Gly Lys Gly Leu Asp Ile Leu His Cys Val Met Phe Pro Glu Pro Leu
85 90 95

Tyr Gly Leu Pro Leu Phe Gly Cys Asp Ile Val Ala Gly Pro Gly Gly
100 105 110

Val Ser Ala Ala Ile Ala Asp Leu Ser Pro Thr Gln Ser Asp Arg Gln
115 120 125

Leu Pro Ala Ala Tyr Gln Lys Ser Leu Ala Glu Leu Gly Gln Pro Glu
130 135 140

Phe Glu Gln Gln Arg Glu Leu Pro Pro Trp Gly Glu Ile Phe Ser Glu
145 150 155 160

Tyr Cys Leu Phe Ile Arg Pro Ser Asn Val Thr Glu Glu Glu Arg Phe
165 170 175

Val Gln Arg Val Val Asp Phe Leu Gln Ile His Cys His Gln Ser Ile
180 185 190

Val Ala Glu Pro Leu Ser Glu Ala Gln Thr Leu Glu His Arg Gln Gly
195 200 205

Gln Ile His Tyr Cys Gln Gln Gln Gln Lys Asn Asp Lys Thr Arg Arg
210 215 220

Val Leu Glu Lys Ala Phe Gly Glu Ala Trp Ala Glu Arg Tyr Met Ser
225 230 235 240

Gln Val Leu Phe Asp Val Ile Gln
245

<210> 40

<211> 490

<212> PRT

<213> Anabaena sp.

B1 Cont

<400> 40

Met Ser Leu Thr Ser Ile Pro Ser Leu Arg Glu Gln Gln His Pro Leu
1 5 10 15

Ile Arg Gln Leu Ala Asp Cys Ile Glu Glu Val Trp His Gln His Leu
20 25 30

Asp Leu Ser Pro Tyr His Leu Pro Ala Glu Leu Gly Tyr Val Glu Gly
35 40 45

Arg Leu Glu Gly Glu Lys Leu Thr Ile Glu Asn Arg Cys Tyr Gln Thr
50 55 60

Pro Gln Phe Arg Lys Met His Leu Glu Leu Ala Lys Val Gly Asn Met
65 70 75 80

Leu Asp Ile Leu His Cys Val Met Phe Pro Arg Pro Glu Tyr Asp Leu
85 90 95

Pro Met Phe Gly Cys Asp Leu Val Gly Gly Arg Gly Gln Ile Ser Ala
100 105 110

Ala Ile Ala Asp Leu Ser Pro Val His Leu Asp Arg Thr Leu Pro Glu
115 120 125

Ser Tyr Asn Ser Ala Leu Thr Ser Leu Asn Thr Leu Asn Phe Ser Gln
130 135 140

Pro Arg Glu Leu Pro Glu Trp Gly Asn Ile Phe Ser Asp Phe Cys Ile
145 150 155 160

Phe Val Arg Pro Ser Ser Pro Glu Glu Glu Ala Met Phe Leu Gly Arg
165 170 175

Val Arg Glu Phe Leu Gln Val His Cys Gln Gly Ala Ile Ala Ala Ser
180 185 190

Pro Val Ser Ala Glu Gln Lys Gln Gln Ile Leu Ala Gly Gln His Asn
195 200 205

Tyr Cys Ser Lys Gln Gln Gln Asn Asp Lys Thr Arg Arg Val Leu Glu
210 215 220

Lys Ala Phe Gly Val Asp Trp Ala Glu Asn Tyr Met Thr Thr Val Leu
225 230 235 240

Phe Asp Leu Pro Glu Met Ser Leu Thr Ser Ile Pro Ser Leu Arg Glu
245 250 255

Gln Gln His Pro Leu Ile Arg Gln Leu Ala Asp Cys Ile Glu Glu Val
260 265 270

Trp His Gln His Leu Asp Leu Ser Pro Tyr His Leu Pro Ala Glu Leu
275 280 285

B1 Cont

Gly Tyr Val Glu Gly Arg Leu Glu Gly Glu Lys Leu Thr Ile Glu Asn
290 295 300

Arg Cys Tyr Gln Thr Pro Gln Phe Arg Lys Met His Leu Glu Leu Ala
305 310 315 320

Lys Val Gly Asn Met Leu Asp Ile Leu His Cys Val Met Phe Pro Arg
325 330 335

Pro Glu Tyr Asp Leu Pro Met Phe Gly Cys Asp Leu Val Gly Gly Arg
340 345 350

Gly Gln Ile Ser Ala Ala Ile Ala Asp Leu Ser Pro Val His Leu Asp
355 360 365

Arg Thr Leu Pro Glu Ser Tyr Asn Ser Ala Leu Thr Ser Leu Asn Thr

370 375 380

Leu Asn Phe Ser Gln Pro Arg Glu Leu Pro Glu Trp Gly Asn Ile Phe
385 390 395 400

Ser Asp Phe Cys Ile Phe Val Arg Pro Ser Ser Pro Glu Glu Glu Ala
405 410 415

Met Phe Leu Gly Arg Val Arg Glu Phe Leu Gln Val His Cys Gln Gly
420 425 430

Ala Ile Ala Ala Ser Pro Val Ser Ala Glu Gln Lys Gln Gln Ile Leu
435 440 445

Ala Gly Gln His Asn Tyr Cys Ser Lys Gln Gln Gln Asn Asp Lys Thr
450 455 460

Arg Arg Val Leu Glu Lys Ala Phe Gly Val Asp Trp Ala Glu Asn Tyr
465 470 475 480

Met Thr Thr Val Leu Phe Asp Leu Pro Glu
485 490

<210> 41

<211> 245

<212> PRT

<213> Nostoc punctiforme

<400> 41

Met Ser Phe Thr Ser Met Pro Ser Leu Arg Glu Gln Gln His Pro Leu
1 5 10 15

B1 Cont

Ile Arg Gln Leu Ala Asp Cys Ile Glu Ala Ala Trp His Gln His Leu
20 25 30

Asp Leu Ser Pro Tyr His Leu Pro Asp Glu Leu Gly Tyr Val Glu Gly
35 40 45

Arg Leu Glu Gly Glu Lys Leu Thr Ile Glu Asn Arg Cys Tyr Gln Thr
50 55 60

Pro Gln Phe Arg Lys Met His Leu Glu Leu Ala Asn Ile Gly Asn Met
65 70 75 80

Leu Asp Ile Leu His Cys Val Met Phe Pro Arg Pro Gln Tyr Asn Leu
85 90 95

Pro Met Phe Gly Cys Asp Leu Val Gly Gly Arg Gly Gln Ile Ser Ala
100 105 110

```
Ala Ile Ala Asp Leu Ser Pro Ile Gln Leu Glu Arg Thr Leu Pro Glu
        115                 120                 125

Ser Tyr Thr Thr Ala Leu Ala Gln Leu Pro Val Leu Asn Phe Ser Gln
    130                 135                 140

Pro Arg Glu Leu Pro Glu Trp Gly Asn Ile Phe Ser Asp Phe Cys Ile
145                 150                 155                 160

Phe Val Arg Pro Gly Ser Pro Glu Glu Glu Ala Met Phe Leu Ser Arg
                165                 170                 175

Val Arg Glu Phe Leu Asp Ile His Cys Met Gln Ala Ile Ala Ser His
            180                 185                 190

Pro Val Ser Val Glu Gln Val Thr Gln Asn Leu Ala Gly Gln His Asn
        195                 200                 205

Tyr Cys Thr Lys Gln Gln Gln Asn Asp Lys Thr Arg Arg Val Leu Glu
    210                 215                 220

Lys Ala Phe Gly Pro Val Trp Ala Glu Asn Tyr Met Thr Thr Val Leu
225                 230                 235                 240

Phe Asp Leu Pro Thr
                245
```

<210> 42

<211> 248

<212> PRT

<213> Synechocystis sp.

<400> 42

B1 Cont

```
Met Ala Val Thr Asp Leu Ser Leu Thr Asn Ser Ser Leu Met Pro Thr
1               5                   10                  15

Leu Asn Pro Met Ile Gln Gln Leu Ala Leu Ala Ile Ala Ala Ser Trp
            20                  25                  30

Gln Ser Leu Pro Leu Lys Pro Tyr Gln Leu Pro Glu Asp Leu Gly Tyr
        35                  40                  45

Val Glu Gly Arg Leu Glu Gly Glu Lys Leu Val Ile Glu Asn Arg Cys
    50                  55                  60

Tyr Gln Thr Pro Gln Phe Arg Lys Met His Leu Glu Leu Ala Lys Val
65                  70                  75                  80

Gly Lys Gly Leu Asp Ile Leu His Cys Val Met Phe Pro Glu Pro Leu
                85                  90                  95
```

Tyr Gly Leu Pro Leu Phe Gly Cys Asp Ile Val Ala Gly Pro Gly Gly
100 105 110

Val Ser Ala Ala Ile Ala Asp Leu Ser Pro Thr Gln Ser Asp Arg Gln
115 120 125

Leu Pro Ala Ala Tyr Gln Lys Ser Leu Ala Glu Leu Gly Gln Pro Glu
130 135 140

Phe Glu Gln Gln Arg Glu Leu Pro Pro Trp Gly Glu Ile Phe Ser Glu
145 150 155 160

Tyr Cys Leu Phe Ile Arg Pro Ser Asn Val Thr Glu Glu Glu Arg Phe
165 170 175

Val Gln Arg Val Val Asp Phe Leu Gln Ile His Cys His Gln Ser Ile
180 185 190

Val Ala Glu Pro Leu Ser Glu Ala Gln Thr Leu Glu His Arg Gln Gly
195 200 205

Gln Ile His Tyr Cys Gln Gln Gln Gln Lys Asn Asp Lys Thr Arg Arg
210 215 220

Val Leu Glu Lys Ala Phe Gly Glu Ala Trp Ala Glu Arg Tyr Met Ser
225 230 235 240

Gln Val Leu Phe Asp Val Ile Gln
245

<210> 43

<211> 247

<212> PRT

<213> Synechocystis sp.

B1 Cont.

<400> 43

Met Gln Ser Pro Pro Ser Glu Ser Ser Ser Thr Val Ala Pro Leu Ile
1 5 10 15

Pro Ser Leu Ala Glu Thr Ile Arg Gly Ala Trp Ile Gly Leu Pro Glu
20 25 30

Leu Lys Pro Leu Asp Ala Asp Ser Asp Phe Ser Ser Ile Glu Gly Gln
35 40 45

Leu Glu Gly Asp Asp Leu Leu Ile Arg Asn Glu Leu Leu Cys Cys Arg
50 55 60

Val Gly Arg Lys Ile His Leu Glu Leu Ala Arg Leu Gly Arg Gly Leu

65 70 75 80

Gln Ile Leu His Cys Val Trp Phe Pro Asp Pro Arg Phe Asp Leu Pro
85 90 95

Ile Phe Gly Ala Asp Ile Val Ala Gly Pro Ala Gly Val Ser Ala Ala
100 105 110

Ile Val Asp Leu Ser Pro Val Ser Gly Thr Leu Pro Ser Gly Ile Glu
115 120 125

Thr Ala Leu Ala Gly Thr Pro Ser Pro Ala Phe Arg Gln Val Arg Asp
130 135 140

Leu Pro Gly Trp Gly Thr Ile Phe Ser Pro His Val Cys Phe Ile Arg
145 150 155 160

Pro Asp Gly Ala Glu Glu Glu Val Leu Phe Arg Ser Arg Val Glu Glu
165 170 175

Val Leu Thr Ile Leu Arg Thr Ala Val Leu Gln Thr Ala Cys Glu Pro
180 185 190

Ala Thr Ala Ala Ser Thr Ile Arg Arg Tyr Glu Gly Gln Leu Ser Tyr
195 200 205

Cys Leu Gln Gln Lys Arg Asn Asp Lys Thr Arg Arg Val Leu Glu Lys
210 215 220

Ala Phe Asp Ala Ser Trp Ala Asp Arg Tyr Ile Glu Glu Leu Leu Phe
225 230 235 240

Asp Asp Pro Leu Pro Pro Gly
245

<210> 44

<211> 243

B1 Cont

<212> PRT

<213> Prochlorococcus marinus

<400> 44

Leu Asn Leu Leu Ser Lys Ser Leu Thr Lys Thr Lys Leu Ile Asp Pro
1 5 10 15

Leu Ile Leu Thr Leu Leu Gln Asn Ile Lys Val Gln Arg Ser Lys Leu
20 25 30

Asn Asp Leu Asn Cys Ile Glu Val Asp Pro Lys Leu Ser Asn Ile Ile
35 40 45

Ser Asn Glu Glu Gly Lys Glu Leu Tyr Ile Glu Asn Glu Phe Tyr Lys
50 55 60

Ala Lys Gly Phe Arg Lys Leu His Ile Glu Val Ala Glu Phe Ser Lys
65 70 75 80

Ser Leu Lys Ile Leu His Cys Val Phe Phe Pro Asp Pro Lys Tyr Asp
85 90 95

Ile Pro Ile Phe Gly Met Asp Leu Val Lys Val Asn Glu Leu Val Ser
100 105 110

Ala Ala Ile Val Asp Leu Ser Pro Ser Ser Lys Asn Gln Asn Leu Lys
115 120 125

Tyr Asp His Leu Leu Ser His Ile Asp Lys Ser Val Phe Lys Ser Lys
130 135 140

Arg Glu Ile Pro Ile Trp Gly Asn Ile Phe Ser Lys Asn Val Phe Phe
145 150 155 160

Ala Ser Leu Lys Asn Glu Ser Glu Lys Asn Ala Phe Cys Lys Ile Val
165 170 175

Asp Asn Tyr Leu Ser Val Leu Ile Gln Leu Ser Gln Ser Thr Ser Pro
180 185 190

Asp Ser Asp Tyr Glu Ile Ile Glu Glu Arg Ile Asn Tyr Gln Lys Asn
195 200 205

Tyr Cys Val Gln Gln Met Lys Asn Glu Lys Thr Ser Leu Val Leu Leu
210 215 220

Lys Tyr Phe Asp Lys Val Trp Val Asp Glu Tyr Ile Lys Lys Val Leu
225 230 235 240

Phe Asp Phe

B1 Cont

<210> 45

<211> 236

<212> PRT

<213> Synechocystis sp.

<400> 45

Met Phe Asp Ser Phe Leu Asn Glu Leu His Ser Asp Ile Thr Lys Arg
1 5 10 15

Gly Gly Ser Pro Leu Pro Leu Pro Glu Gly Leu Glu Glu Cys Arg Ser
20 25 30

Ser Lys Ser Ser Ser Val Ile Gln Ser Trp Leu Trp Asp Val Pro Gly
35 40 45

Phe Arg Arg Trp Arg Val Thr Arg Leu Asp Ala Gly Asp Ser Leu Gln
50 55 60

Val Phe Asn Ser Val Ala Tyr Pro Asp Tyr Asn Tyr Asp His Pro Leu
65 70 75 80

Met Gly Val Asp Leu Leu Trp Phe Gly Ala Arg Gln Lys Leu Val Ala
85 90 95

Val Leu Asp Phe Gln Pro Leu Val Gln Asp Lys Asp Tyr Leu Asp Arg
100 105 110

Tyr Phe Ser Gly Leu Lys Glu Leu Asn Gln Arg Phe Pro Asp Leu Asn
115 120 125

Gly Glu Glu Thr Met Arg Ser Phe Asp Pro Asn Gln Tyr Phe Ser Ser
130 135 140

Trp Leu Leu Phe Cys Arg Gly Gly Ala Glu Gln Ala Asp Leu Ser Leu
145 150 155 160

Pro Lys Ala Phe Ser Ala Phe Leu Lys Ala Tyr Trp Asp Leu His Asp
165 170 175

Asn Ala Lys Ser Ile Pro Ser Thr Ile Pro Pro Glu Glu Val Lys Asn
180 185 190

Leu Gln Asp Lys Tyr Asp Ile Tyr Ser Ala Glu Arg Asp Pro Ala His
195 200 205

Gly Leu Phe Thr Ser His Phe Gly Lys Asp Trp Ser Asn Arg Phe Leu
210 215 220

His Glu Phe Leu Phe Pro Ala Ser Ser Ser His Lys
225 230 235

B1 Cont

<210> 46

<211> 235

<212> PRT

<213> Synechocystis sp.

<400> 46

Met Phe Asp Pro Phe Leu Glu Glu Leu Gln Thr Gly Ile Gln Ala Arg
1 5 10 15

Gly Gly Ile Ser Val Glu Val Pro Ala Gly Leu Glu His Asn Gln Ser

20 25 30

Gln Lys Gly Ser Ser Thr Ile Gln Ser Trp Leu Trp Gln Val Pro Gly
35 40 45

Phe Arg Arg Trp Arg Val Thr Arg Leu Asp Ala Gly Asp Ser Leu Gln
50 55 60

Val Leu Asn Ser Val Ala Tyr Pro Asp Phe Asp Leu Asp His Pro Leu
65 70 75 80

Met Gly Val Asp Leu Leu Trp Phe Gly Ala Arg Gln Lys Leu Val Ala
85 90 95

Val Leu Asp Phe Gln Pro Leu Val Gln Asp Lys Asp Tyr Leu Asp Arg
100 105 110

His Phe Asp Gly Leu Lys Asp Leu Asn Ala Arg Phe Pro Asp Leu Asn
115 120 125

Gly Glu Glu Thr Met Arg Ser Phe Asp Pro Asn Gln Tyr Phe Ser Ser
130 135 140

Trp Leu Leu Phe Cys Arg Gly Gly Ser Glu Glu Ala Asp Arg Ser Leu
145 150 155 160

Pro Lys Ala Phe Ser Ala Phe Leu Lys Ala Tyr Trp Gly Leu His Asp
165 170 175

Glu Ala Ser Lys Glu Pro Ser Ser Ile Ser Pro Gly Asp Val Glu Arg
180 185 190

Leu Gln Asn Ala Tyr Asp Val Tyr Ser Ala Glu Arg Asp Pro Ala His
195 200 205

Gly Leu Phe Thr Ser His Phe Gly Lys Glu Trp Ser Asp Arg Phe Leu
210 215 220

His Glu Phe Leu Phe Pro Ala Ser Gln Pro Ala
225 230 235

B' Cont

<210> 47

<211> 241

<212> PRT

<213> Prochlorococcus sp.

<400> 47

Met Asn Lys Leu Met Leu Gln Asp Leu His Asn Asn Leu Lys Arg Arg
1 5 10 15

Ile Ile Ser His Gly Gly Lys Pro Ile Glu Val Glu Asn Gly Met Ser
20 25 30

Glu Arg Phe Ser His Lys Gln Asp Thr Val Ile Lys Ser Trp Leu Trp
35 40 45

Asp Val Pro Gly Phe Arg Arg Trp Arg Val Thr Arg Met Asp Ala Gly
50 55 60

Asp Lys Leu Gln Val Leu Asn Ser Val Ala Tyr Pro Ala Tyr Thr Asn
65 70 75 80

Asp Lys Pro Ile Leu Gly Ile Asp Ile Leu Trp Phe Gly Leu Lys Arg
85 90 95

Lys Leu Val Ala Val Leu Asp Phe Gln Pro Leu Val Gln Glu Glu Arg
100 105 110

Tyr Phe Cys Arg Tyr Tyr Lys Asp Leu Gln Ile Leu Lys Asn Arg Phe
115 120 125

Val Asp Phe Asn Ser Gln Lys Thr Met Lys Ile Tyr Asp Ser Asn Lys
130 135 140

Tyr Phe Ser Pro Trp Val Leu Leu Tyr Asn Gly Ser Phe Asp Asp Leu
145 150 155 160

Gln Cys Ser Leu Ala Lys Ile Leu Asp Glu Phe Leu His Ala Tyr Trp
165 170 175

Gln Val Asp Asn Asn Asn Ser Arg Glu Tyr Ile Lys Ile Ile Pro Ser
180 185 190

Lys Val Glu Gln Leu His Ile Asn Tyr Asp Ile Tyr Ser Ala Glu Arg
195 200 205

Asp Pro Ala His Gly Leu Phe Lys Ser Tyr Phe Gly Gln Thr Trp Ala
210 215 220

Asp Gln Phe Val Arg Glu Phe Leu Phe Pro His Ser His Leu Thr Ala
225 230 235 240

Asp

<210> 48

<211> 236

<212> PRT

<213> Prochlorococcus sp.

<400> 48

Met Phe Glu Ser Leu Lys Asn Phe Val Lys Thr Asn Ile Glu Asp Leu
1 5 10 15

Asp Gly Lys Glu Leu Glu Ile Ser Lys Glu Phe Lys Glu His His Asn
20 25 30

Lys Asp Ser Lys Tyr Ile Ile Lys Asn Trp Ile Phe Glu Ser Gln Gln
35 40 45

Tyr Arg Lys Trp Arg Ile Thr Lys Leu Asp Gly Gly Asp Lys Leu Gln
50 55 60

Val Phe Asn Thr Val Ala Tyr Pro Asn Phe Lys Ser Glu Phe Pro Ile
65 70 75 80

Leu Gly Ala Asp Ile Leu Trp Phe Gly Thr Ser Gln Lys Leu Leu Ala
85 90 95

Ile Phe Asp Tyr Gln Pro Leu Ile Gln Glu Lys Lys Tyr Leu Gln Lys
100 105 110

Tyr Cys Ser Ser Leu Asp Phe Ile Lys Asn Gln Tyr Ser Val Phe Asp
115 120 125

Asn His Lys Met Lys Asn Ile Tyr Asp Ser Lys Lys Tyr Phe Ser Pro
130 135 140

Trp Val Met Ile Cys Arg Gly Asn Lys Leu Asn Leu Asp Arg Asp Leu
145 150 155 160

Asn Asn Ile Phe Cys Ser Phe Val Ser Asn Tyr Leu Thr Ile Asn Lys
165 170 175

Leu His Gln Asn Asn Gln Phe Leu Asp Leu Glu Gln Ile Lys Asn Asn
180 185 190

Gln Ile Asp Tyr Asp Lys Tyr Ser Ala Glu Lys Asp Pro Ala Asp Lys
195 200 205

Leu Phe Lys Thr Phe Phe Gly Glu Thr Trp Thr Glu Asn Phe Ile Asn
210 215 220

Asn Phe Leu Phe Thr Leu Asn His Asn Pro Leu Lys
225 230 235

<210> 49

<211> 280

<212> PRT

<213> Nostoc punctiforme

<400> 49

```
Met Leu Asn Ser Gln Ser Pro Leu Arg Asn Val Ala Leu Phe Leu Ile
1               5                  10                  15

Asn Glu Thr Cys Met Ile Ala Ile Thr Tyr Phe His Ala Arg Val Asn
            20                  25                  30

Lys Ser Cys Ser Met Tyr Lys Pro Phe Leu Glu Phe Leu Glu Lys Glu
        35                  40                  45

Leu Phe Gln Arg Phe Asp Leu Gln Ser Arg Val Ile Pro Pro Gly Leu
    50                  55                  60

Glu Phe Lys Val Ser Asp Arg Gly Arg Asn Pro Ala Thr Ile Arg Ser
65                  70                  75                  80

Trp Cys Tyr Gln Ser Gln Glu Leu Arg Lys Ile Arg Tyr Thr Tyr Ile
                85                  90                  95

Asp Ala Gly Glu Ser Ala Gln Ile Phe Asn Ser Val Val Tyr Pro Ser
            100                 105                 110

His Asn Tyr Asp Leu Pro Leu Leu Gly Ile Asp Phe Leu Ser Phe Gly
        115                 120                 125

Lys Val Lys Asn Leu Ile Val Leu Asp Phe Gln Pro Leu Phe Gln Asp
    130                 135                 140

Glu Asp Tyr Gln Asn Lys Tyr Ile Ala Pro Leu Lys Tyr Leu His Asn
145                 150                 155                 160

Lys Tyr Pro Asp Leu Ala Gln Asn Leu Glu Met Lys Phe Tyr Asp Ala
                165                 170                 175

Asn Gln Tyr Phe Ser Lys Tyr Leu Leu Phe Ala Lys Thr Asp Ala Glu
            180                 185                 190

Thr Val Ser Thr Arg Val Phe Glu Ala Phe Gln Asp Tyr Leu Asn Leu
        195                 200                 205

Tyr Trp Gln Met Leu Ala Asp Ala Gln Ala Leu His Asp Pro Glu Asp
    210                 215                 220

Ile Gln Arg Ile Val Lys Ala Gln Lys Asp Tyr Asp Gln Tyr Ser Ala
225                 230                 235                 240

Asp Arg Asp Pro Ala Ser Gly Leu Phe Ser Ser Tyr Phe Gly His Glu
                245                 250                 255

Trp Ala Glu Arg Phe Leu His Glu Phe Leu Phe Glu Asp Ala Val Pro
            260                 265                 270

Leu Ala Val Ser Ala Ser Lys Arg
        275                 280
```

B1 Cont

<210> 50

<211> 257

<212> PRT

<213> Synechocystis sp.

<400> 50

```
Met Thr Asn Gln Arg Phe Lys Ser Thr Asp Pro Val Asn Ile Glu Gly
1               5                  10                  15

Trp Ser Trp Gln Pro Phe Leu Glu Asp Ala Ile Lys Arg Leu Glu Gly
            20                  25                  30

Leu Asn Val Glu Pro Tyr Pro Val Pro Asp Arg Phe Leu Gln Arg Glu
        35                  40                  45

Asp Gln Thr Gly Ser Lys Ser Lys Ser Ile Pro Val Thr Thr Ala Thr
    50                  55                  60

Trp Ala Cys Lys Thr Glu Lys Phe Arg Gln Val Arg Ala Ala Cys Val
65                  70                  75                  80

Ser Ala Gly Ser Ala Ala Ser Val Leu Asn Phe Val Ile Asn Pro Lys
                85                  90                  95

Ser Thr Tyr Gly Leu Pro Phe Phe Gly Gly Asp Leu Val Thr Phe Pro
            100                 105                 110

Ala Gly His Leu Leu Ala Leu Asp Leu Gln Pro Ala Ile Lys Thr Asp
        115                 120                 125

Glu Val His Thr Thr His Val Trp Asp Arg Leu Ile Pro Ile Phe Glu
    130                 135                 140

Arg Trp Arg Asp Gln Leu Pro Tyr Gly Gly Pro Ile Pro Glu Glu Ala
145                 150                 155                 160

Gln Pro Phe Phe Ser Pro Gly Phe Leu Trp Thr Arg Leu Pro Leu Gly
                165                 170                 175

Glu Glu Gly Asp Glu Leu Ile Gln Ser Ile Val Arg Pro Ala Phe Asn
            180                 185                 190

Asp Tyr Leu Asp Leu Tyr Leu Glu Leu Ala Ala Ser Ala Glu Arg Val
        195                 200                 205

Thr Asp Glu Arg Ser Glu Val Leu Leu Gln Gly Gln Arg Lys Tyr Thr
    210                 215                 220

Asp Tyr Arg Ala Glu Lys Asp Pro Ala Arg Gly Met Leu Thr Arg Phe
225                 230                 235                 240
```

His Gly Ser Glu Trp Thr Glu Ala Tyr Ile His Thr Val Leu Phe Asp
245 250 255

Leu

<210> 51

<211> 262

<212> PRT

<213> Synechocystis sp.

<400> 51

Met Ser Ile Asp Leu Arg Ala Ser Ser Leu Asp Pro Val Gln Ile Pro
1 5 10 15

Gly Trp Arg Trp Gln Pro Phe Leu Asp Glu Ala Ser Ala Ala Leu Lys
20 25 30

Pro Phe Asn Pro Ser Pro Tyr Pro Ile Ala Glu Thr Phe Leu Gln Lys
35 40 45

Glu Gly Ser Thr Gly Ser Lys Ala Lys Pro Val Pro Val Thr Thr Ala
50 55 60

Thr Trp Ala Cys Ser Thr Asp Lys Leu Arg Gln Val Arg Cys Ala Cys
65 70 75 80

Val Glu Ala Gly Met Ala Ala Ser Val Leu Asn Phe Val Ile Asn Pro
85 90 95

Ser Cys Arg Phe Asp Leu Pro Phe Phe Gly Ala Asp Leu Val Thr Leu
100 105 110

B1 Cont

Pro Asn Gly His Leu Leu Ala Leu Asp Leu Gln Pro Val Asp Lys Ala
115 120 125

Asp Pro Asp His Thr Gln Pro Val Trp Glu Arg Leu Met Pro Leu Phe
130 135 140

Glu Arg Trp Gln Ala Glu Leu Pro Asp Gly Gly Pro Ile Pro Glu Glu
145 150 155 160

Ala Gln Pro Tyr Phe Ser Pro Ala Phe Leu Trp Thr Arg Ile Pro Leu
165 170 175

Gly Glu Glu Gly Asp Glu Leu Ile Glu Arg Val Ile Arg Pro Ala Phe
180 185 190

Ile Asp Tyr Leu Gln Leu Tyr Leu Asn Leu Val Ala Glu Ala Glu Pro

195 200 205

Val Ser Asp Asp Arg Ala Glu Leu Leu Leu Ser Gly Gln Lys Arg Tyr
210 215 220

Thr Ala Tyr Arg Ala Glu Lys Asp Pro Ala Arg Gly Met Leu Thr Arg
225 230 235 240

Phe Tyr Gly Ser Glu Trp Thr Glu Ser Tyr Ile His Gly Val Leu Phe
245 250 255

Asp Leu Glu Asp Ala Ala
260

<210> 52

<211> 257

<212> PRT

<213> Prochlorococcus marinus

<400> 52

Met Ile Ile Lys Arg Asp Asn Ser Leu Ser Lys Ile Asp Leu Arg Asp
1 5 10 15

Trp Ile Trp Thr Pro Phe Phe Asn Asp Leu Val Asp Lys Leu Ser Val
20 25 30

Phe Glu Ile Glu Pro Tyr Pro Val Ser His Asp Phe Leu Ser Lys Glu
35 40 45

Ser Ile Thr Gly Ser Arg Arg Asn Pro Val His Val Thr Thr Leu Thr
50 55 60

B1 Cont

Trp Ala Ala Lys Phe Glu Lys Ile Lys Gln Val Arg Leu Ala Cys Ile
65 70 75 80

Lys Gly Gly Glu Ser Leu Ser Val Phe Asn Leu Leu Ile His Pro Leu
85 90 95

Asn Asp Tyr Asp Leu Pro Phe Phe Gly Ala Asp Phe Val Thr Leu Pro
100 105 110

Asn Gly His Leu Leu Ala Leu Asp Leu Gln Pro Ala Leu Lys Leu Asp
115 120 125

Asn Ile His Thr Glu Asn Val Trp Pro Arg Leu Ile Pro Leu His Asp
130 135 140

His Trp Gln Ser Leu Leu Pro Ser Gly Gly Glu Ile Pro Lys Glu Ala
145 150 155 160

Glu Pro Tyr Phe Ser Pro Gly Phe Leu Trp Ser Arg Leu Pro Leu Ser
165 170 175

Lys Glu Ser Asp Asn Ile Ile Ser Glu Ile Leu Arg Pro Ala Phe Gly
180 185 190

Glu Tyr Leu Ser Leu Tyr Ile Glu Leu Leu His Ile Ala Lys Pro Leu
195 200 205

Lys Lys Glu Arg Ala Leu Lys Ile Leu Glu Gly Gln Lys Ala Tyr Ile
210 215 220

Asn Tyr Arg Ser Thr Lys Asp Pro Ala Arg Ala Met Leu Cys Arg Phe
225 230 235 240

Tyr Gly Lys Glu Trp Thr Glu Asp Tyr Ile His Lys Val Leu Phe Asn
245 250 255

Ile

<210> 53

<211> 257

<212> PRT

<213> Prochlorococcus sp.

<400> 53

Met Leu Ile Gln Asn Thr Ile Phe Tyr Ser Gln Glu Trp Arg Trp Ala
1 5 10 15

Lys Phe Ile Lys Phe Leu Ile Ser Gln Leu Asp Asn Tyr His Cys Val
20 25 30

Glu His Lys Ile Ala Ser Asp Phe Ser Tyr Lys Glu Ser Ser Tyr Gly
35 40 45

Ser Lys Lys Ser Lys Lys Asn Ile Asn Leu Phe Thr Trp Gly Ala Thr
50 55 60

His Gln Lys Arg Ile Asn Phe Ala Arg Ala Val Cys Ile Asn Ser Pro
65 70 75 80

Asn Tyr Ser Val Leu Asn Phe Leu Ile Ile Pro Lys Thr Ser Tyr Asn
85 90 95

Ile Pro Phe Leu Gly Val Asp Phe Val Ser Leu Pro Thr Ser His Leu
100 105 110

Leu Val Leu Asp Phe Gln Pro Ser Leu Lys Val Glu Asn Gln Phe Asn
115 120 125

Ser Glu Leu Leu Glu Gln Ile Ile Lys Leu Lys Lys Ser Cys His Ser
130 135 140

Ser Leu Pro Val Ala Glu Lys Met Ser Glu Gln Val Ala Lys Phe Phe
145 150 155 160

Ser Pro Gly Leu Ile Trp Ser Arg Leu Ala Lys His Gln Asp Ser Asp
165 170 175

Asn Leu Ile Glu Asn Gln Leu Tyr Asp Ser Phe Lys Glu Tyr Leu Asn
180 185 190

Leu Tyr Leu Lys Thr Leu Phe Glu Ser Glu Glu Val Gly His Gly Leu
195 200 205

Gln Gln Glu Leu Ile Asn Gly Gln Asn Asp Tyr Leu Asn Tyr Arg Arg
210 215 220

Asp Asn Asp Pro Ala Arg Pro Met Leu Ser Ser Leu Phe Gly Lys Asp
225 230 235 240

Phe Thr Glu Ser Leu Ile Asn Lys Val Leu Phe Ser Thr Asn Lys Val
245 250 255

Leu

<210> 54

<211> 255

<212> PRT

<213> Nostoc punctiforme

B1 Cont

<400> 54

Met Asn Ser Glu Arg Ser Asp Val Thr Leu Tyr Gln Pro Phe Leu Asp
1 5 10 15

Tyr Ala Ile Ala Tyr Met Arg Ser Arg Leu Asp Leu Glu Pro Tyr Pro
20 25 30

Ile Pro Thr Gly Phe Glu Ser Asn Ser Ala Val Val Gly Lys Gly Lys
35 40 45

Asn Gln Glu Glu Val Val Thr Thr Ser Tyr Ala Phe Gln Thr Ala Lys
50 55 60

Leu Arg Gln Ile Arg Ala Ala His Val Gln Gly Gly Asn Ser Leu Gln
65 70 75 80

Val Leu Asn Phe Val Ile Phe Pro His Leu Asn Tyr Asp Leu Pro Phe

85 90 95

Phe Gly Ala Asp Leu Val Thr Leu Pro Gly Gly His Leu Ile Ala Leu
100 105 110

Asp Met Gln Pro Leu Phe Arg Asp Asp Ser Ala Tyr Gln Ala Lys Tyr
115 120 125

Thr Glu Pro Ile Leu Pro Ile Phe His Ala His Gln Gln His Leu Ser
130 135 140

Trp Gly Gly Asp Phe Pro Glu Glu Ala Gln Pro Phe Phe Ser Pro Ala
145 150 155 160

Phe Leu Trp Thr Arg Pro Gln Glu Thr Ala Val Val Glu Thr Gln Val
165 170 175

Phe Ala Ala Phe Lys Asp Tyr Leu Lys Ala Tyr Leu Asp Phe Val Glu
180 185 190

Gln Ala Glu Ala Val Thr Asp Ser Gln Asn Leu Val Ala Ile Lys Gln
195 200 205

Ala Gln Leu Arg Tyr Leu Arg Tyr Arg Ala Glu Lys Asp Pro Ala Arg
210 215 220

Gly Met Phe Lys Arg Phe Tyr Gly Ala Glu Trp Thr Glu Glu Tyr Ile
225 230 235 240

His Gly Phe Leu Phe Asp Leu Glu Arg Lys Leu Thr Val Val Lys
245 250 255

<210> 55

<211> 329

<212> PRT

<213> Arapidopsis thaliana

B1 Cont.

<400> 55

Met Ala Leu Ser Met Glu Phe Gly Phe Ser Ile Gly Ser Cys Phe Lys
1 5 10 15

Ala Pro Asn Pro Pro Val Leu Ile Ser Ala Ser Pro Asn Lys Ile Asn
20 25 30

Phe Thr Leu Arg Arg Arg Lys Lys Arg Phe Leu Leu Arg Val Ser Ala
35 40 45

Val Ser Tyr Lys Glu Phe Ala Glu Ser Ala Leu Glu Glu Thr Arg Lys
50 55 60

```
Arg Ile Val Leu Glu Pro Ser His Leu Gln Glu Lys Tyr Ser Ser Met
65                  70                  75                  80

Thr Gly Leu Asp Gly Lys Thr Glu Leu Gln Met Leu Ala Phe Lys Ser
                85                  90                  95

Ser Lys Ile Arg Leu Leu Arg Ser Met Ala Ile Glu Asn Glu Thr Met
            100                 105                 110

Gln Val Phe Asp Phe Ala Gly Phe Met Glu Pro Glu Tyr Asp Thr Pro
        115                 120                 125

Ile Phe Cys Ala Asn Phe Phe Thr Ser Thr Asn Val Asn Ile Val Val
    130                 135                 140

Leu Asp Leu Asn Pro Leu His Gln Leu Thr Asp Gln Thr Asp Tyr Gln
145                 150                 155                 160

Asp Lys Tyr Tyr Asn Lys Ile Met Ser Ile Tyr His Lys Tyr Ala Glu
                165                 170                 175

Thr Phe Pro Trp Gly Gly Lys Leu Thr Gly Glu Ser Ile Lys Phe Phe
            180                 185                 190

Ser Pro Leu Val Met Trp Thr Arg Phe Ser Ser Ser Lys Glu Lys His
        195                 200                 205

Lys Ala Leu Phe Ser Ala Phe Leu Glu Tyr Tyr Gln Ala Trp Leu Glu
    210                 215                 220

Met Thr Ile Gln Val Arg Glu Glu Met Glu Pro Ser His Val Arg Ala
225                 230                 235                 240

Asn Cys Glu Ala Gln His Lys Tyr Leu Thr Trp Arg Ala Gln Lys Asp
                245                 250                 255

Pro Gly His Gly Leu Leu Lys Arg Leu Val Gly Glu Ala Lys Ala Lys
            260                 265                 270

Glu Leu Leu Arg Asp Phe Leu Phe Asn Gly Val Asp Glu Leu Gly Thr
        275                 280                 285

Lys Thr Phe Ile Asp Tyr Phe Pro Glu Tyr Gln Thr Glu Asp Gly Thr
    290                 295                 300

Val Ser Asp Lys Arg Ser Ile Ile Gly Lys Ser Tyr Glu Thr Arg Pro
305                 310                 315                 320

Trp Asp Leu Thr Gly Gln Phe Ile Gly
                325
```

B' Cont.

<210> 56

<211> 205

<212> PRT

<213> Hordeum vulgare

<400> 56

```
Met Asp Phe Met Leu Gln Ser Ser Leu His Cys Lys Val Pro Asn Gly
1               5                  10                  15

Ala Ile Asp Ile Thr Ser Leu Phe Ile Asn Leu Asn Ala Ser Thr Asp
            20                  25                  30

Ala Pro His Phe Ile Met Glu Phe Ile Gln Gly Ser Pro Thr Ser Met
        35                  40                  45

Val Val Leu Leu Asp Leu Leu Pro Arg Lys Asp Leu Ala Leu His Pro
    50                  55                  60

Glu Tyr Ile Glu Lys Tyr Tyr Glu Asp Thr Glu Val Asp Lys Gln Arg
65                  70                  75                  80

Lys Ile Ile Glu Gln Leu Pro Gln Ala Arg Pro Tyr Leu Ser Pro Ser
                85                  90                  95

Leu Phe Val Arg Ser Ala Phe Ser Pro Thr Ala Val Phe Phe Thr Ile
            100                 105                 110

Asp Cys Gly Lys Gly Gly Glu Gly Thr Leu Glu Glu Ile Val His Gly
        115                 120                 125

His Leu Ala Ser Val Val Lys Gly Ile Leu Gln Ile Trp Leu Asp Thr
    130                 135                 140

Cys Ala Ser Asp Ala Ser Glu Met Glu Glu Gly Glu Arg Glu Ile Met
145                 150                 155                 160

Val Lys Arg Asp Arg Thr Val Arg Ser Lys Ser Ile Glu Val Asp Leu
                165                 170                 175

Thr Ala Asn Leu Pro Arg Met Phe Gly Pro Asp Val Ser Gly Arg Ile
            180                 185                 190

Ile Ala Glu Ile Arg Lys Ala Phe Gly Val Gln Glu Gly
        195                 200                 205
```

<210> 57

<211> 319

<212> PRT

<213> Arapidopsis thaliana

B1 Cont

<400> 57

```
Met Ala Met Ile Phe Cys Asn Thr Leu Tyr Ser Ser Ser Ser Pro Ser
1               5                  10                  15

Tyr Leu Ser Pro Leu Thr Ser Lys Pro Ser Arg Phe Ser Lys Asn Leu
            20                  25                  30

Arg Pro Arg Ala Gln Phe Gln Ser Met Glu Asp His Asp Asp His Leu
        35                  40                  45

Arg Arg Lys Phe Met Glu Phe Pro Tyr Val Ser Pro Thr Arg Lys Gln
    50                  55                  60

Leu Met Val Asp Leu Met Ser Thr Val Glu Asn Arg Leu Gln Ser Gln
65                  70                  75                  80

Leu Leu Pro Cys Asn Leu Pro Pro Asp Val Arg Asn Phe Asn Asn Pro
                85                  90                  95

Asn Gly Ser Ala Glu Ala Ser Leu His Ile Arg Ser Gly Asp Lys Ser
            100                 105                 110

Ser Pro Ile Asp Phe Val Ile Gly Ser Trp Ile His Cys Lys Ile Pro
        115                 120                 125

Thr Gly Val Ser Leu Asn Ile Thr Ser Ile Ser Gly Phe Leu Asn Ser
    130                 135                 140

Ser Thr Lys Ala Pro Asn Phe Val Val Glu Leu Ile Gln Ser Ser Ser
145                 150                 155                 160

Lys Ser Leu Val Leu Ile Leu Asp Leu Pro His Arg Lys Asp Leu Val
                165                 170                 175

Leu Asn Pro Asp Tyr Leu Lys Glu Tyr Tyr Gln Asp Thr Ala Leu Asp
            180                 185                 190

Ser His Arg Gln Ser Leu Leu Lys Leu Pro Glu Val Asn Pro Tyr Val
        195                 200                 205

Ser Pro Ser Leu Phe Val Arg Ser Ala Phe Ser Pro Thr Ala Ser Met
    210                 215                 220

Leu Lys Ile Asp Ala Glu Glu Glu Asp Lys Leu Glu Glu Ile Leu Arg
225                 230                 235                 240

Asp His Val Ser Pro Ala Ala Lys Glu Val Leu Glu Val Trp Leu Glu
                245                 250                 255

Arg Cys Val Lys Glu Glu Glu Glu Lys Ile Val Val Gly Glu Glu Glu
            260                 265                 270

Arg Met Glu Leu Glu Arg Arg Asp Lys Ser Phe Arg Arg Lys Ser Ile
```

B1 Cont

B1 Cont

```
          275                 280                 285

Glu Asp Asp Leu Asp Leu Gln Phe Pro Arg Met Phe Gly Glu Glu Val
    290                 295                 300

Ser Ser Arg Val Val His Ala Ile Lys Glu Ala Phe Gly Val Leu
305                 310                 315
```